



end of the cable bolt 21 is provided with an expansion anchor 35 which is formed as part of the anchor 10, or anchor 10 closer(est) to the far tip of the cable. The expansion anchor 35 enables installation of the bolt so as to permit post tensioning grouting. In addition, the uncovered region of the tendon 22 (that is without the tube 8) is provided with a number of bulges 2 which function, as before, to increase the keying or interengagement between, the cable 1 and the grout 5.

As explained above in relation to FIG 9, the far end of the cable 21 of FIG 11 is able to plastically deform and move through the anchors 10 thereby absorbing the energy of the moving strata.

Turning now to Figs 12 and 13, a still further embodiment of an anchor 200 is illustrated in which each of the shells 211, 212 is substantially identical having a central protrusion 215. Thus the two opposed protrusions 215 form a pinch point which deforms the solid rod tendon 201 of the rock bolt. Thus the two protrusions 215 securely clamp the solid tendon 201 which is forced to deform and pass between the protrusions 215 as the bar or tendon 201 yields. Thus a considerable amount of energy is dissipated in this plastic deformation of the solid bar 201 and the rock bolt is able to yield without breaking.

Furthermore, where the bar 201 is provided with a pattern of exterior lugs or ribs (either forming a thread, a partial thread or other grout engaging mechanism) then such lugs or ribs are also able to be deformed by the pinch point created between the two opposed protrusions 215. Depending upon the severity of the pinch point only the exterior lugs can be deformed without deforming the central body of the bar 201, or the entirety of the bar 201 can be deformed.

As seen in Fig. 14, in yet another embodiment, a one piece anchor 300 is provided. The anchor 300 is formed from a tubular piece of steel, and is preferably annular in transverse cross-section having an internal diameter just larger than the exterior diameter of the tube 8, or if tube 8 is omitted and the tendon 301 waxed or greased, for example, then larger than the tendon 301. The tendon 301 can be either a solid rod or bar as illustrated in Fig. 14 or a cable as illustrated previously.